

Bell Work

12-Dec-2016

- i. What is the correct depiction of elemental Chlorine in a balanced equation. (Hint, check your finger nails)
- ii. Using only your green conversion sheets and periodic table show all the dimensional analysis work for determining the grams of chlorine in a 250mL sample of the pure element.

EQ: Why do some “things” interact while others do not?

Objective:

You will be able to show the correct net ionic equation for non-exception simple single and double replacement precipitation reactions

Crash Course Chem. Video Review

<https://youtu.be/llu16dy3ThI>

New Elements

- 113 Ununtrium
- 115 Ununpentium
- 117 Ununseptium
- 118 ununoctium

Periodic Table of the Elements

1
H
Hydrogen
1.00794

2
He
Helium
4.002602

3
Li
Lithium
6.941

4
Be
Beryllium
9.0122

5
B
Boron
10.811

6
C
Carbon
12.01115

7
N
Nitrogen
14.0064

8
O
Oxygen
15.9994

9
F
Fluorine
18.9984

10
Ne
Neon
20.179

11
Na
Sodium
22.98976928

12
Mg
Magnesium
24.304

13
Al
Aluminum
26.9815385

14
Si
Silicon
28.0855

15
P
Phosphorus
30.973762

16
S
Sulfur
32.06

17
Cl
Chlorine
35.453

18
Ar
Argon
39.948

19
K
Potassium
39.0983

20
Ca
Calcium
40.078

21
Sc
Scandium
44.955912

22
Ti
Titanium
47.88

23
V
Vanadium
50.9415

24
Cr
Chromium
51.9961

25
Mn
Manganese
54.938045

26
Fe
Iron
55.845

27
Co
Cobalt
58.933195

28
Ni
Nickel
58.6934

29
Cu
Copper
63.546

30
Zn
Zinc
65.38

31
Ga
Gallium
69.723

32
Ge
Germanium
72.64

33
As
Arsenic
74.9216

34
Se
Selenium
78.96

35
Br
Bromine
79.904

36
Kr
Krypton
83.80

37
Rb
Rubidium
85.4678

38
Sr
Strontium
87.62

39
Y
Yttrium
88.90584

40
Zr
Zirconium
91.224

41
Nb
Niobium
92.90638

42
Mo
Molybdenum
95.94

43
Tc
Technetium
98

44
Ru
Ruthenium
101.07

45
Rh
Rhodium
102.9055

46
Pd
Palladium
106.90558

47
Ag
Silver
107.8682

48
Cd
Cadmium
112.411

49
In
Indium
114.818

50
Sn
Tin
118.710

51
Sb
Antimony
121.757

52
Te
Tellurium
127.6

53
I
Iodine
126.90447

54
Xe
Xenon
131.29

55
Cs
Cesium
132.90545

56
Ba
Barium
137.327

57
La
Lanthanum
138.90547

58
Ce
Cerium
140.12

59
Pr
Praseodymium
140.90768

60
Nd
Neodymium
144.24

61
Pm
Promethium
144.9127

62
Sm
Samarium
150.36

63
Eu
Europium
151.964

64
Gd
Gadolinium
157.25

65
Tb
Terbium
158.92534

66
Dy
Dysprosium
162.50014

67
Ho
Holmium
164.93032

68
Er
Erbium
167.259

69
Tm
Thulium
168.93032

70
Yb
Ytterbium
173.044

71
Lu
Lutetium
174.967

72
Hf
Hafnium
178.49

73
Ta
Tantalum
180.94788

74
W
Tungsten
183.84

75
Re
Rhenium
186.207

76
Os
Osmium
190.23

77
Ir
Iridium
192.222

78
Pt
Platinum
195.083

79
Au
Gold
196.966569

80
Hg
Mercury
200.59

81
Tl
Thallium
204.3833

82
Pb
Lead
207.2

83
Bi
Bismuth
208.980399

84
Po
Polonium
209

85
At
Astatine
210

86
Rn
Radon
222

87
Fr
Francium
223

88
Ra
Radium
226

89
Ac
Actinium
227

90
Th
Thorium
232.0377

91
Pa
Protactinium
231.036888

92
U
Uranium
238.02891

93
Np
Neptunium
237.048173

94
Pu
Plutonium
244

95
Am
Americium
243

96
Cm
Curium
247

97
Bk
Berkelium
247

98
Cf
Californium
251

99
Es
Einsteinium
252

100
Fm
Fermium
257

101
Md
Mendelevium
258

102
No
Nobelium
259

103
Lr
Lawrencium
262

104
Rf
Rutherfordium
261

105
Db
Dubnium
262

106
Sg
Seaborgium
266

107
Bh
Bohrium
264

108
Hs
Hassium
277

109
Mt
Meitnerium
268

110
Ds
Darmstadtium
271

111
Rg
Roentgenium
272

112
Uub
Ununbium
285

113
Uut
Ununtrium
284

114
Uuq
Ununquadium
289

115
Uup
Ununpentium
288

116
Uuh
Ununhexium
292

117
Uus
Ununseptium
294

118
Uuo
Ununoctium
294

Number of electrons in each shell

Atomic Number

Symbol

Name

Atomic Mass

Metals

Nonmetals

Transition Elements

Noble Gases

Inner Transition Elements

Synthetic

Radioactive

1 New designation

1A Original designation

() Atomic weight of most stable isotope

Unknown elements 113 - 118 are shown in their predicted positions

57
La
Lanthanum
138.90547

58
Ce
Cerium
140.12

59
Pr
Praseodymium
140.90768

60
Nd
Neodymium
144.24

61
Pm
Promethium
144.9127

62
Sm
Samarium
150.36

63
Eu
Europium
151.964

64
Gd
Gadolinium
157.25

65
Tb
Terbium
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66
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Thulium
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70
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71
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93
Np
Neptunium
237.048173

94
Pu
Plutonium
244

95
Am
Americium
243

96
Cm
Curium
247

97
Bk
Berkelium
247

98
Cf
Californium
251

99
Es
Einsteinium
252

100
Fm
Fermium
257

101
Md
Mendelevium
258

102
No
Nobelium
259

103
Lr
Lawrencium
262

Practice

Potassium Chromate and Lead (II) Nitrate

What are the chemical formulas?

What is the reaction type if they react?

What are the products if they react?

Practice

1. ammonium sulfide
2. sodium nitrate
3. cupric bromide
4. aluminum sulfate
5. potassium nitrate
6. ferrous carbonate
7. lead(II) phosphate
8. diphosphorus pentoxide
9. copper (II) hydroxide
10. calcium fluoride

11. nickel(II) nitrate
12. silver cyanide
13. ammonium sulfite
14. zinc sulfate
15. tin(II) chloride
16. antimony(III) chloride
17. silver sulfide
18. magnesium hydroxide
19. ammonium carbonate
20. nickel(II) acetate

Total Ionic Equations

Write the molecular equation (synthesis, decomposition, etc.), check for reactants & products that are soluble or insoluble.

Assume the reaction is in water

We can use a solubility table to tell us what compounds dissolve in water.

If the compound is soluble (does dissolve in water), then splits the compound into its component ions

If the compound is insoluble (does NOT dissolve in water), then it remains as a compound

Total Ionic Equations Summery

1. Write the balanced equation
2. Check for reactants & products that are insoluble. (Assume the reaction is in water, use a solubility table)
3. Splits soluble compounds into component ions distributing coefficients as needed.

Solubility Table, see page in

<u>Ion</u>	<u>Solubility</u>	<u>Exceptions</u>
NO_3^-	soluble	none
ClO_4^-	soluble	none
Cl^-	soluble	except Ag^+ , Hg_2^{2+} , *Pb^{2+}
I^-	soluble	except Ag^+ , Hg_2^{2+} , Pb^{2+}
SO_4^{2-}	soluble	except Ca^{2+} , Ba^{2+} , Sr^{2+} , Hg^{2+} , Pb^{2+} , Ag^+
CO_3^{2-}	insoluble	except Group IA and NH_4^+
PO_4^{3-}	insoluble	except Group IA and NH_4^+
-OH	insoluble	except Group IA, *Ca^{2+} , Ba^{2+} , Sr^{2+}
S^{2-}	insoluble	except Group IA, IIA and NH_4^+
Na^+	soluble	none
NH_4^+	soluble	none
K^+	soluble	none

*slightly soluble

Solubilities Not on the Table!

Gases only slightly dissolve in water

Strong acids and bases dissolve in water

- Hydrochloric (HCl), Hydrobromic (HBr), Hydroiodic (HI), Nitric(HNO_3), Sulfuric(H_2SO_4), Perchloric Acids (HClO_4)
- **Group I hydroxides** (should be on your chart anyway)

Water slightly dissolves in water! (H^+ and OH^-)

There are other tables and rules that cover more compounds than your table!



Total Ionic Equations

Molecular Equation:



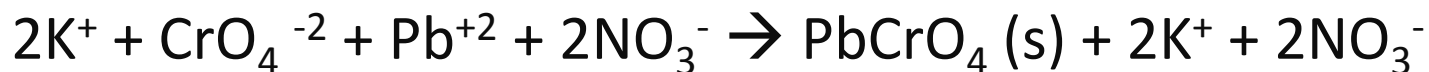
Soluble

Soluble

Insoluble

Soluble

Total Ionic Equation:



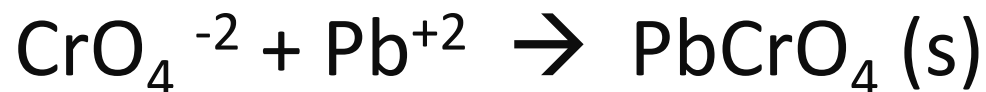
Net Ionic Equations

These are the same as total ionic equations, but you should cancel out ions that appear on BOTH sides of the equation

Total Ionic Equation:



Net Ionic Equation:



Net Ionic Equations

Try this one! Write the molecular, total ionic, and net ionic equations for this reaction: Ammonium Chloride reacts with Lead (II) Nitrate in hot water.

Molecular:

Total Ionic:

Net Ionic:

PRACTICE

5.0×10^{20} molecules of $\text{Cl}_2 \rightarrow$ moles $\text{Cl}_2 \rightarrow$ g Cl_2

3.5×10^{21} molecules of $\text{NaCl} \rightarrow$ moles \rightarrow g NaCl

2.5 g $\text{NaCl} \rightarrow$ moles $\text{NaCl} \rightarrow$ molecules NaCl

5 g $\text{Cl}_2 \rightarrow$ moles $\text{Cl}_2 \rightarrow$ molecules Cl_2

Book Work

~~Complete #8-12 on page 228~~

Then read page 322-327 and do #1, 2, 4, 15, 17,
and 18 when finished